

# EUROPEAN PATENT OFFICE

## Patent Abstracts of Japan

PUBLICATION NUMBER : 11167036  
PUBLICATION DATE : 22-06-99

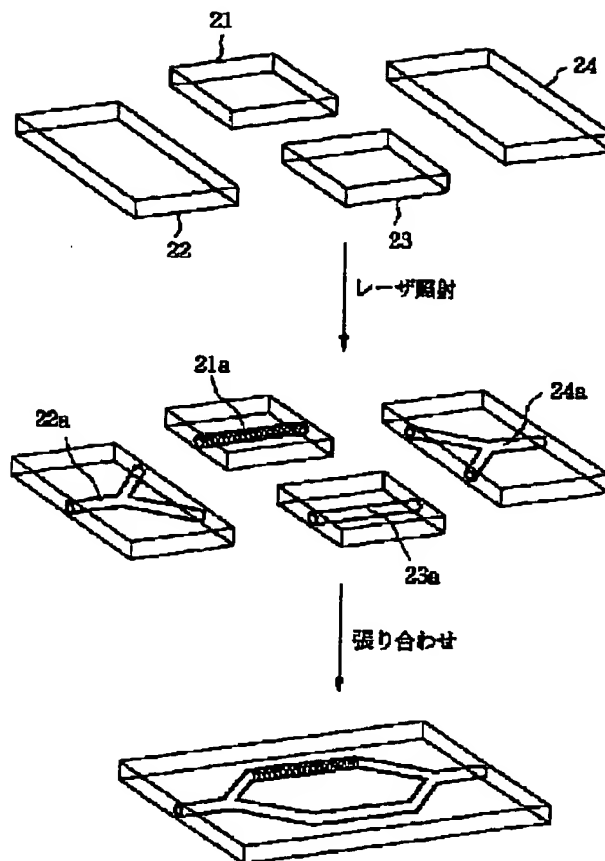
APPLICATION DATE : 04-12-97  
APPLICATION NUMBER : 09333784

APPLICANT : SUGIMOTO NAOKI;

INVENTOR : HIRAO KAZUYUKI;

INT.CL. : G02B 6/13 G02B 6/12 G02F 1/313  
G02F 1/35

TITLE : OPTICAL WAVEGUIDE CIRCUIT AND  
NONLINEAR OPTICAL DEVICE



ABSTRACT : PROBLEM TO BE SOLVED: To provide an optical waveguide circuit where an optical waveguide even in a complicated shape is easily written.

SOLUTION: A  $\text{Bi}_2\text{O}_3$ -containing glass material 21 having large three-dimensional nonlinear optical effect is used as a base body or part of the base body and a part 21a which is varied in refractive index by convergent irradiation with laser light is formed as an optical waveguide in the base body. The optical waveguide is branched in, for example, a two-pronged shape and one of the branched optical waveguides is formed in the  $\text{Bi}_2\text{O}_3$ -containing glass material. Consequently, this is built in an optical Kerr shutter type switch, a Mach-Zehnder type switch, a directional coupler type switch, etc., to constitute an optical switch with quick response.

COPYRIGHT: (C)1999,JPO